An Indigenous 'Slow' Food Revolution: Agriculture on the West African Savanna

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> Revolutions are the locomotives of history (Marx 1850).
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> Food production was an economic revolution – the greatest in human history after the mastery of fire (Childe 1934).
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> Agriculture was our species' first revolution (Braidwood 1960).
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> Plant domestication in Africa represents a significant contribution to world agriculture (Carney 2009).
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> ...West Africa can be regarded as a living laboratory for the understanding of agricultural origins. (Kahlheber and Neumann 2007).
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> Who ever said that Africa is poor and backward? Who says that it has no agriculture worthy of the name? (Petrini 2009).

The emergence of agriculture is viewed as one of the most important and consequential developments in human history. This is true for society at large and especially in scholarly communities. Generations of archaeologists working within diverse international scientific settings have gathered various kinds of evidence for this transition at sites across the globe and have offered thought-provoking theories of origin, causation and development. Ever since pioneering work by celebrated archaeologist V. Gordon Childe (1892-1957) 'revolution' has been the term most commonly used to describe this transition. The rise of agriculture was a central component of Childe's formulation of the enduring notion of the 'Neolithic Revolution,' and its associated novel cultural developments (1936, 1942). Building on evidence for early agriculture in the Fertile Crescent area of the ancient Near East, Childe offered a novel synthesis that portrayed a dramatic shift from hunting and gathering to farming and the proliferation of new cultural forms and practices, including sedentary living, craft production such as pottery, occupational specialization, resource accumulation, trade and socio-economic and political differentiation. This original shift to agriculture in the Fertile Crescent, thought to have occurred approximately 10,000 years BC, was presented as the catalyst for this remarkable cultural evolution. In this model the Neolithic Revolution then spread to Europe and other regions. All subsequent archaeologists exploring the linkages between the rise of agriculture and the development of significant new socio-cultural patterns have articulated with Childe's foundational observations, arguments and propositions on the revolutionary nature of farming (Greene 1999; Sherratt 1989; Smith 2009). Over the intervening decades as new archaeological evidence has emerged around the world there have been many additions and refinements to his original portrait of 'Agricultural Revolution,' with new sites of crop domestication identified and new developmental sequences for food production and culture change becoming apparent.

Generations of historians have also highlighted the 'revolutionary' nature of agriculture. After identifying the shift to 'Grand carnivorism' (the hunting of large animals at the end of the Paleolithic) as the first ancient 'revolution' in the human diet, the noted French historian Fernand Braudel suggested that, 'The second revolution, in the seventh or sixth millennium before the Christian era, was Neolithic agriculture with arrival of cultivated cereals. Now fields were cultivated, at the expense of hunting-ground and extensive grazing' (1979, p. 105). Presaging later commentators on the downsides of this shift, such as Jared Diamond (1987, 1999), Yuval Noah Harari (2015) and Michael Pollan (2001, 2006), Braudel argued that agriculture and agriculturalists became 'obliged' to the plant world and that key crops like wheat, rice, and maize became 'plants of civilization,' plants that organized and determined much of the social, cultural, political and spiritual change that followed – much of it understood as problematic (1979, p. 107).

More recently the influential Italian historian Massimo Montanari has offered an insightful perspective on the 'revolutionary' shift to agriculture and its consequences. He argues that early beneficiaries viewed the new regime based on farming as a transition from 'primitive' to 'civilized' life. 'The mental mind-set of the ancients posits agriculture as the moment of breakthrough and innovation, as the decisive leap that forms 'civilized' man, separating him from nature – that is, from the world of animals and "savages"...' (2006, p. 4). Montanari discusses the hallmarks of the ancient agricultural phase including new forms of cultural, social, political, and religious expression. Highlighting the significance of the subsequent shift to industrialism, he writes, '...man in an industrial or postindustrial culture is tempted to recognize a fundamental "naturalness" in agricultural activities, which, given our experience, we consider "traditional" ' (2006, p. 3). Thus the move to industrialism is another civilized development. He suggests that these different positions stem from our sense of the meaning and significance of 'tradition' and 'innovation.' He clarifies the situation quite

well. 'What we call *culture* takes its place where tradition and innovation intersect. Tradition is made up of knowledge, techniques, values, which are handed down to us. Innovation exists insomuch as this knowledge, these techniques, these values modify the place of man in the environmental context, rendering him able to experience a new reality. *A very successful innovation*: that is how we could define tradition. Culture is the interface between these two perspectives' (2006, p. 7 emphasis in original).

An even more recent perspective on agriculture and 'revolution' hinges on the idea of 'tradition' as well. In his promotion of the Slow Food Revolution, one of the movement's founders and leading figures Carlo Petrini often calls attention to the need to embrace 'traditional' agriculture and agrarian lifeways. Petrini, speaking to the traditional producers gathered at the 2008 Terra Madre conference, suggests that we need a 'greater respect for the rural economy,' for 'an economy with its feet on the ground and calloused hands, the one you all represent' (2009, p. vx). For him, the envisioned Slow Food revolution depends on learning from local people and the appreciation of their ways. 'For them, tradition is not a monotonous repetition of gestures and rites and products. They are open to novelty, to an idea that, following tradition, will enable them to progress; they are acquainted with the oft-cited concept of tradition as "a successful innovation" and put it into practice. They do not abandon the old for the new; on the contrary, they add the new to the complex system that has forged their identity. They know where they come from and are pretty clear about where they are going' (2009, p. 53). The connection to Montanari's perspective on the contrasting views of agriculture as primitive or modern is clear and strong. Petrini states, 'I am convinced that, precisely on account of their wisdom and skills, food communities [traditional farmers, fishers, etc.] will be leading players in the third industrial revolution' (2009, p. 52).

In this paper I explore West African savanna agriculture through these lenses of 'revolution' – as a site of creative and consequential change. I am interested in how the rise and continuity of agriculture in the region articulates with and informs the dominant narratives of food 'revolution' that I have identified above. I focus on two central revolutionary processes: the historic shift to farming in the West African region and the contemporary global Slow Food Revolution. Overall, I am interested in gleaning insights from the relative uniqueness and 'slowness' of the original transition as well as from the slow agrarian practices that endure in the area. My goal in the first section is to highlight the elements that are most significant and relatively unique vis-à-vis transitions to agriculture in other world settings, especially the prototypical Fertile Crescent. In the second section, I connect savanna foodways with the Slow Food revolution that Petrini and his compatriots are working toward. I suggest that local farmers in West Africa, the beneficiaries of an original slow agricultural revolution, have much to offer this new revolutionary movement. Finally, I suggest that savanna farmers can help provide knowledge and resources needed to respond to the daunting challenges climate scientists are indicating may lead to profound transformation of our food systems.

A 'slow' and indigenous shift to farming in West Africa

To be sure, the shift to agriculture marked a turning point in human history. The general portraits of the 'revolution' reviewed above reveal the broad contours of this important process. As the decades have passed since Childe's pioneering work we have learned a good deal more about the nature of the transition in the ancient Near East, as well as the dynamics of pathways to agriculture in the Americas and Asia (Bellwood 2005 provides a robust overview, see also Price and Bar-Yosef 2011 and Fuller et al 2015 for key updates). In comparison, research on the transition to farming in Africa was slow to materialize and only in the last several decades have we truly begun to gain a limited but clearer sense of the nature of the shift to farming on the vast continent, with an emphasis on the Ethiopia, the Nile Valley and West Africa. In this paper I focus primarily on the West African context. The picture that emerges for this region suggests that the development of agriculture followed a fairly unique trajectory. A brief review of the most notable scholarship in this area will help illuminate the special features and elements of the West African food 'revolution,' elements that allow us to better understand the specificity of this indigenous slow food revolution.

In the middle part of the last century, George Murdock, a noted American anthropologist, promoted the view that the savanna region of West Africa was a cradle of agricultural origin on the continent. Upon reviewing the evidence at hand, he suggested, '…agriculture was independently developed … by the Negroes of West Africa. This was, moreover, a genuine invention, not a borrowing from another people. Furthermore, the assemblage of plants ennobled from wild forms in Negro Africa ranks as one of the four major agricultural complexes evolved over the entire course of human history' (1959, p. 64). On these grounds he identified the first farmers of the region as 'one of mankind's leading creative benefactors' (1959, p. 65). While the evidence for Murdock's celebration of the original 'Sudanic Agricultural Civilization' has been rightfully criticized on several specific fronts (see for example Munson 1980), his attention to the creativity of the region's people stands. Indeed, based on identification of three distinctive domains of species transformation in the region, McIntosh suggests that, 'Africa represents one of the world's most innovative theaters of plant domestication' (1997, p. 409).

The pioneering work of plant geneticist and agricultural historian Jack Harlan is particularly important for understanding the dynamics of plant domestication in West Africa. He was one of the first to argue, based on

plant genetic evidence, that the shift to agriculture there was independent and separate from the Near Eastern model. In an article that has become a touchstone for practically all subsequent scholarship on the development of agriculture, Harlan proposed 'the theory that agriculture originated in three different areas and that, in each case, there was a system composed of a center of origin and a noncenter, in which activities of domestication were dispersed over a span of 5,000 to 10,000 kilometers. One system includes a definable Near East center and a noncenter in Africa; another system includes a North Chinese center and a noncenter in Southeast Asia and the South Pacific; the third system includes a Mesoamerican center and a South American noncenter' (1971, p. 473).

For Africa he suggested a dynamic in which people in different settings across a widespread area brought key wild plants into an agricultural production system. 'The plant evidence…reveals a rather impressive list of cultigens… including sorghum, one of the four major cereals of the world' (1971, p. 470). He offers a summary table that presents a wide range of crops, resources that emerge as cornerstones of West African agriculture and persist in current times. (Fig. 1) Among the plants listed we find pearl millet, fonio, ground nuts, cowpeas, okra, and gourds. As we will see, these are all crops that remain part of the savanna food culture. Significantly he states, 'These plants were domesticated by Africans in Africa and provided an adequate base for a widespread development of sedentary agriculture' (1971, p. 470). Importantly, he goes further to connect this new foodway that arose on the West African savanna to significant cultural developments. 'The high cultural levels of Nok, Ife, Benin and the Sudanic Kingdoms were supported by an indigenous African agriculture' (1971, p. 470). More recently Carney has offered similar assessment and inventory of African agricultural creativity. She notes that, '…one of the remarkable achievements of Africans over the past ten thousands years was the independent of plants and animals for food' (2009, p. 6). The content of her table echoes Harlan's. We see the same basic crop suite. (Fig. 2) These two general crop overviews help establish West Africa as an important location for indigenous agricultural revolution.

Field research by archaeologists working at Neolithic sites in the Sahara and savanna regions of West Africa has provided significant insight into the historical development of West African livelihood systems and their related cultural dynamics. Through this work we have a more nuanced portrait of the emergence of agriculture and further evidence of the creativity of ancient savanna farmers. Instead of an early and dramatic agricultural revolution from hunting and gathering to agriculture that is characteristic of the Fertile Crescent, we see a different pattern: hunting and gathering followed by the emergence of pastoralism with wild plants use and, only much later, domestication, farming and the kind of cultural change associated with the Neolithic Revolution in the ancient Near East. A distinguished group of archaeologists has recently referred the African shift to agriculture as 'protracted, parallel and plural' (Fuller et al 2015, p. 64). In what ways was it different and why does its particular dynamic matter?

Cereals	
Brachiaria deflexa (a millet)	Guinea
Digitaria exilis (fonio)	Senegal to Cameroun
Digitaria iburua (black fonio)	Togo and Nigeria
Eleusine coracana (finger milet)	Highlands, Ethiopia to Uganda
Eragrostis tef (tef)	Ethiopia
Pennisetum americanum (pearl millet)	Dry savanna, Sudan to Senegal
Sorghum bicolor (sorghum)	Broad-leaved savanna, Sudan and Chad
Pulses	
Kerstingiella geocarpa (a groundnut)	Nigeria and Cameroun
Vigna unguiculata (cowpea)	Nigeria
Voandzeia subterranea (a groundnut)	Nigeria and Cameroun
Tubers	
Dioscorea rotundata (yam)	Ivory Coast to Cameroun
Dioscorea spp. (yams)	Forest zones, Sierra Leone to Congo
Plectranthus esculentus (kafir potato)	Guinea to Togo
Sphenostylis stenocarpa (yampea)	Nigeria to Guinea
Solenostemon rotundifolius (piasa)	Guinea to Togo
Oil-yielding	
Balanites aegyptica (desert date)	Sudan to Senegal
Butyrospermum paradoxum (karité)	Nigeria to Senegal
Elaeis guineensis (oil palm)	Wet forest, Sierra Leone to Congo
Guizotia abyssinica (noog)	Ethiopia
Telfairia occidentalis (a gourd)	Forest zone, West Africa
Others	
Abelmoschus esculentus (okra)	Savanna zones, West Africa
Adansonia digitata (boabab)	Sudan to Senegal
Caffea Arabica (coffee)	Ethiopia
Catha edulis (chat)	Ethiopia
Colocynthis citrullus (watermelon)	Sudan (wild race widespread)
Gossypium herbaceum (cotton)	Sudan, origin in doubt
Musa ensete (ensete)	Ethiopia

Fig. 1. Short list of African domesticates and probable areas of domestication (Harlan 1971, p. 470).

Adansonia digitata L.	Baobab
Brachiaria deflexa (Schumach.) C.E. Hubb. Ex Robyns	Guinea millet
Ceratotheca sesamoides Endl.	False sesame: leaves and seeds
Citrullus lantaus (Thunb.) Matsum & Nakai	Watermelon
Corchorus olitorius L.	Jute mallow/bush okra
Cucumis melo L.	Muskmelon
Digitaria decumbens Stent	Pangola grass
Digitaria exilis (Kippist) Stapf	Fonio/"hungry rice"
Digitaria iburua Stapf	Black fonio
Hibiscus cannabinus L.	Kenaf
Hibiscus sabdariffa L.	Roselle/hibiscus/*bissap*
Lagenaria siceraria (Molina) Standl.	Bottleneck gourd
Oryza glaberrima Steud.	African rice
Parkia biglobosa (Jacq.) R. Br. Ex G. Don	Locust bean
Pennisetum glaucum (L.) R. Br.	Bulrush or pearl millet
Polygala butyracea Heckel	Black beniseed
Sesamum alatum Thonn.	Sesame (leaves)
Sesamum radiatum Schumach. & Thonn.	Beniseed
Solanum aethiopicum L.	African eggplant/garden egg/ guinea squash
Solanum incanum L.	Bitter tomato
Solanum macrocarpon L.	Nightshade
Sorghum bicolor (Linn.) Moench	Sorghum/guinea corn
Vigna subterranea (L.) Verde.	Bambara groundnut/*Voandzeia*
Vitellaria paradoxa C.F. Gaertn.	*Karité* or shea nut tree
Xylopia aethiopica (Dunal) A. Rich	Guinea pepper

Fig. 2. Food crops of African origin (Carney 2009).

Marshall and Hildebrand provide a rich review of existing data and present a strong case for the 'distinctiveness' of Africa's pathway to food production. One important difference is captured in their 'cattle before crops' model. 'In most regions of the world, plants were domesticated before animals. In Africa, plants were domesticated long after herding was first established. Delays in domestication of African plants are due to a number of factors, many of which relate to scheduled consumption, predictability, and the mobile nature of early pastoral societies' (2002, p. 122). They argue that African cattle were domesticated during the tenth millennium BP as Saharan hunter-gatherers faced challenges in shifting and highly challenging environments. Herds offered more in the way of livelihood stability. They suggest that domestication of African plants only occurred around 4000 BP 'because of the high mobility of herders, and risk associated with cultivation in arid environments' (2002, p. 99) This general scenario is supported in a comparative and systematic analysis of the developmental dynamics of African pastoralism (Linseele 2010).

Neumann (2005) argues that rather than an abrupt and dramatic shift from hunting and gathering to agriculture in West Africa there is a 'vast middle ground' between that mode of livelihood and farming. In fact, he argues for 'cultivation' (the care and nurture of wild plants for food use) before farming, and a slow and late intensification of agriculture, with a long intervening period of pastoralism – measured in the thousands of years.

Kahlheber and Neumann, in their review of the development of agriculture in West Africa, note that the process was 'unique and distinctly different from other regions of the world' (2007, p. 320). Again, they focus on the relatively early domestication and herding of animals and the long lasting foraging economy of the area. They also underscore the fact that use of wild plants continues to contemporary times. In light of the particularities of the transition and the continued use of wild resources, they suggest that, '…West Africa can be regarded as a living laboratory for the understanding of agricultural origins.' (2009, p. 339).

Manning offers a compelling and comprehensive summary of the uniqueness of the African process. 'The evidence from Africa… presents a very different picture [from that from the Near East]. In particular, cereal agriculture appears to be a relatively late phenomenon; the data indicating more than a 3000 year lag between the initial appearance of domesticated animals in the eastern Sahara and the first signs of domestic crops along the western fringes of the Sahara-Sahel borderlands, and even later in Ethiopia. Indeed, the domestication of plants and animals, the emergence of ceramic technology, and the urbanisation of landscapes do not appear synchronously as one package, negating the concept of 'neolithisation' as it is used in the Near East and Europe' (2010, p. 43). It is important to highlight her point on the early, pre-agricultural presence of pottery in the region. In contrast with the Near East, numerous studies in West Africa have confirmed the presence of ceramics about 10,000 years BP. Indeed, research completed by a group of archaeologists (Huysecom et al 2009) suggests that early pastoralists in West Africa were using grindstones to process wild cereals and pottery to cook them. Clearly the roots of the porridge based savanna foodway are deep. They point out that some ceramic remains from the pastoralist era include impressions of and temper from wild grasses. The presence of specialized microlithic arrowheads in these settings also indicates that early herders were also involved in hunting activities.

Manning and colleagues sum up the situation well. 'Rather than representing sedentary hunter-gathers who become farmers, the African trajectory was first toward mobile pastoralist-collectors, who cooked in ceramics, and

then much later the addition of cultivation with sedentism developing at or after this time' (Manning et al 2011, p. 319) The team traces the pathway from pastoralist use of millet's wild ancestors toward pearl millet farming on Saharan fringe prior to 2500 BC to illustrate this dynamic. As Carney notes, 'Domestication was a slow and laborious process, one that may have in the African case taken two or three millennia to realize' (2009, p. 15). This scenario is supported further in a recent synthetic analysis of data on the structure and mechanisms of early agricultural expansion in West Africa (Ozainne et al 2014).

To summarize, studies of the Neolithic period in West Africa document a slow move from pastoralism toward agriculture and reveal significant variations from the Near Eastern transition model. Cattle and other livestock were domesticated long before farming began. Pottery was used as part of the pastoral lifeway. Herders made regular use of wild plants notably grasses for thousands of years before any sign of their domestication. There is ample evidence for pre-agricultural plant processing in the form of plentiful grindstones. A clear and definitive shift to settled farming did not occur until approximately 4,000 years ago when evidence indicates the development of a new foodway focused on millet and indigenous sauce crops with continuing use of livestock and even wild foods. Changes in pottery at the time reflect the expansion of boiling as a key cooking technique. Permanent village settlements with defined habitations become common. These developments came slowly and were supported and informed by the experiences of generations of people who managed resources to produce a durable lifeway. They do not appear to have been in any rush to undertake an agricultural revolution. Instead, research suggests that they were compelled by significant desiccation and associated environmental change in the Saharan region. Pastoralists from that area are likely to have been moved south into the savanna and to have developed farming, a novel subsistence regime for the region.

By the onset of the Iron Age in the region (c. 1000 BC) agriculture, the porridge and sauce based foodway, and characteristic social, cultural, political and religious elements were well developed across savanna West Africa (Breunig 2013; Breunig and Neumann 2002; Dueppen 2012; Linseele 2013; MacDonald 1997; and Neumann 2005). McIntosh indicates that, 'Taken in total, the plant and animal remains recovered from throughout the Jenne-jeno sequence [c. 300 BC to 1100 AD on the Inland Niger Delta in Mali] give a strong impression of a generalized subsistence economy.' Residents cultivated grain crops, gathered wild plant foods, hunted and fished (1998, p. 165, see also 1997). This generalized subsistence economy or foodway was well established across the region and has had a long run right up into the present moment.

Historical and early ethnographic insights document continuity of 'savanna food culture' into era of the pre-colonial states of the region. Several key sources, reviewed by Lewicki (1974), provide the evidence. Ibn Battutta ,who traveled widely in the region in the Middle Ages (c. 1340-50 AD), described the foodways of agriculturalists in savanna and noted the prevalence of millet, milk, honey, chicken, baobab, fonio, karite (shea), and fish – many of the plants and crops that appear in Harlan's indigenous domesticates 'savanna complex' suite and that remain part of the local cuisine. Mungo Park, a Scottish explorer in late 18th century, echoed Ibn Battuta and, interestingly, added American corn and peanuts to the list of common crops and foods. These were cultigens that made their way to West Africa via the Atlantic slave trade. Réné Caillé, a French explorer in early 19th century again noted the central role of millet porridge and green sauce in the meals consumed on the savanna. Later, in the colonial era, more detailed insights on local customs and practices were offered by a group of administrator-ethnographers who began to document local production and household dynamics (see Wooten 1993). Individuals such as Maurice Delafosse, Charles Monteil, Henri Labouret, and Louis Tauxier published works that attest to the continuity of savanna foodways in Afrique Occidental Française (AOF). The richest most focused study was undertake in the waning years of the colonial period by Léon Pales' *L'alimentation de l'A.O.F.* (1955). The volume presents a very detailed study of food, nutrition and cooking in the region and offers a clear portrait of its enduring centerpiece: porridge and sauce. The study also gives evidence of continuity and change in the realm of cooking technology with enduring ceramic and wood traditions and the expansion of industrial metal technologies: pots, pans, and bowls modeled on ceramic traditions.

My ongoing ethnographic research in the region provides evidence of the overall continuity of the food culture in the region. In *The Art of Livelihood* (2009) I provide a detailed portrait of a contemporary farming system on the savanna of rural Mali and underscore the remarkable continuity of crops from past times. Millet, sorghum, cowpeas, okra, bitter eggplant, and other 'original' crops from the onset of agriculture in the region persist in the fields being worked by local farmers today and wild resources such as baobab leaves and fruit, karate (shea) nuts and locust bean pods are still commonly gathered. In my current research project 'Cooking for Life on the West African Savanna' I am documenting the consumption side of the contemporary foodway. In a preliminary publication on this work (Wooten 2016), I offer a detailed description of the cuisine and culinary practices of rural Mali. I show that the foundation of daily, monthly and annual consumption continues to be porridge and sauce. Day in and day out, women today cook the meals for their families using locally produced grain and traditional vegetables and gathered leaves for their families, much as their female ancestors did before them. While ancient origin crops persist and prevail in the diet, corn and peanuts are sometimes used as well (see Wooten 2016). Hardworking

cooks are also carrying on culinary practices using technologies that have deep roots in the region: wooden mortars and pestles, three stone hearths using local wood as fuel, and iron and clay pots. They are also integrating technologies made with newer, modern materials such as plastic and aluminum. While continuity is a strong part of the process, adaptability is evident as well.

In this section I have provided an overview of the development of agriculture in West Africa and its characteristic and enduring food culture. Many generations ago the creative and adaptable pastoralist ancestors of today's farmers forged a revolutionary new lifeway. To do so, they drew on thousands of years of accumulated knowledge of plants and animals and environments. They domesticated wild plants, developed a crop portfolio and established a farming system and a food culture that have proven to be overwhelmingly stable across very tough times. Today's farming people remain closely remain connected with the environment and well-established foodways. They are curators of received knowledge and have deep experience with the land. They also continue to embrace cultural elements that first emerged on built on ancient agrarian roots. For example, elsewhere (Wooten 2000 and 2009), I have described a rich and enduring cultural complex in Mali called 'Ciwara' (literally farming animal). It is a village level performance tradition involving masks, masquerade, and ritual components and its focus is on agriculture – origins and contemporary manifestations. Oral traditions suggest that the phenomenon originated as a celebration of the mythic being, Ciwara (half-human half-antelope), that taught ancient people how to cultivate the wild grains they found in their environment, thereby setting them on a path that led to the agrarian livelihood and foodway that is characteristic of the region even today. I have witnessed several of these performances over the years and have explored their symbolic and ritual contributions to the success of contemporary farmers. This type of cultural expression highlights the enduring importance of community and the agrarian identity.

Interestingly, the slowly evolved and sustainable traditional food culture I have described is celebrated in another, emerging narrative of agricultural change: the Slow Food Revolution. What does the savanna foodway offer those interested in a new agricultural revolution and slow cultural ways?

Savanna foodways for the slow food revolution and a more sustainable future

Beginning in the 1980s a movement critical of industrial agricultural and fast food emerged in Italy and has spread rapidly and globally since (Petrini 2006). The Slow Food Revolution articulated and promoted by Carlo Petrini and his comrades and gastronomes has called into question the modern food system, the system that fellow Italian, Massimo Montanari has referred to as 'the second agricultural revolution' – the one centering on industrial food system. Petrini and his compatriots find the system, lacking in many important ways and have promoted a 'revolution' – a rejection of industrial food and a re-engagement with past, more traditional slower foodways. Their founding document, *Il Manifesto,* first appeared in the *Gambero Rosso*, an Italian food and wine magazine in 1987 and has been published in various forms since. Their critique is clear and their agenda, inspirational. 'Our century, which began and has developed under the insignia of industrial civilization, first invented the machine, and then took it as a life model. We are enslaved by speed and have all succumbed to the same insidious virus: Fast Life, which disrupts our habits, pervades the privacy of our homes, and forces us to eat Fast Foods.' (Petrini 2006, p. 76). It goes on to point the way forward away from 'extinction.' 'Our defense should begin at the table with Slow Food. Let us rediscover the flavors and savors of regional cooking and banish the degrading effects of Fast Food.' (2006, p. 76). The reaction to the industrial food revolution's ways is clear and the vision of reconnection with more meaningful and flavorful foodways is strong.

Petrini and his collaborators have developed their agenda for action over time, from the Salon del Gusto to the Ark of Taste to Presidia and, in 2004, to Terra Madre, envisioned as a 'world meeting of food communities.' By design the meetings provide an opportunity for sharing knowledge and experiences, celebrating achievements and addressing challenges. With the development of Terra Madre, Slow Food began a more in depth engagement with slow producers and slow eaters around the world, especially those in non-Western contexts. The forum focuses closer attention on traditional farmers through such concepts such a 'co-producers' and 'food communities and stresses how important their foodways are to what he terms the 'third food revolution.' 'Terra Madre is steeped in values that are *revolutionary*, that is, capable of changing our destiny, of transforming each one of us profoundly. There is no other way to prevent calamities from adversely affecting the planet we live on.' (Petrini 2009, pp. 14-15 emphasis added).

Petrini's welcoming comments at the first gathering in 2004 set the stage. 'Farmers, fishers, breeders, nomads from the Peruvian Andes to the Argentine pampas, from the Amazon jungle to the Chiapas mountains, from Californian vineyards to the First Nations reservations, from the shores of the Mediterranean to the seas of Northern Europe, from the Balkans to Mongolia, from Africa to Australasia, all organized into what we have decided to call 'food communities.' We are firmly convinced that food communities, founded on sentiment, fraternity, and the rejection of egotism, will have a strategic importance in the emergence of a new society, a society based on fair trade.' (Petrini 2006, p. 164)

Petrini suggests that, 'Farmers and peasants will be the leading players of the third industrial revolution, which

sets out from your villages, your businesses, and your land. The first industrial revolution started with the steam engine and the second with electricity; they both relied on energy derived from fossil fuels. The third industrial revolution will be the revolution of clean and sustainable energy. It will start in the countryside, agriculture being the only human activity based on photosynthesis.' (Petrini 2009, p. xix). For him 'The people of Terra Madre are humble but proud…' and he argues that '(t)hey… are still somebody. They possess the know-how to feed themselves and others, to interact with their own natural and cultural context.' (2009, p. 19). They are 'intellectuals of the earth' and they are 'indispensable for the future of our planet.' (2009, p. 20). He argues that they are key sources of 'slow knowledge' and insight into the productive tension between tradition and innovation.

The farming people who are the central actors in the West African case I have presented can and should be important contributors to the new slow food revolutionary narrative. The Slow Food Revolution places a high value on characteristics that are part and parcel of the savanna foodway. What lessons or 'ark' resources can savanna farmers offer those working on the Slow Food Revolution? As I have described above, savanna farmers in Mali have largely intact local food systems in which crops with long histories play a key role. They have knowledge and experience making a living in a challenging environment without high levels of outside 'instruction.' One might say their food system and cuisine is highly adapted and resilient, even sustainable. As such savanna 'food communities' should be engaged, respected and their knowledge and experience embraced. In fact, this relationship is developing within the Slow Food movement.

'Who ever said that Africa is poor and backward? Who says that it has no agriculture worthy of the name?' (Petrini 2009, p. 31). Petrini reviews a set of examples to show the significance and import of African farming and cuisine. He offers one from Mali: the Dogon people and provides a rich portrait of local foodways. 'Their many traditional dishes include millet and bean beignets, tò (millet polenta), shallot and wood-sorrel patties, powdered onion and baobab, acasà (peanut and sugar patties), millet couscous, and millet beer. The only food product the Dogon sell commercially in any quantity is the shallot (fresh or dried). The most interesting feature of this agriculture is the variety of crops they grow in their traditional gardens, in which areas are allocated to fruit trees (mango, orange, banana, and karite, or shea), cereals (rice, corn, millet and fonio millet), peanuts, vegetables, and legumes. Together with the knowledge of their women, who use the flowers, fruits, and leaves of every plant (cultivated or wild, such as the baobab) to make a special condiment, so much biodiversity in such confined spaces (sometimes gardens are as small as a hectare in area) is without doubt the Dogon people's most precious resource.' (2009, p. 122). This foodway is a clear example of the savanna food culture I have documented in this paper. The cuisine and the culture that evolved thousands of years ago is to a large degree still the mode for most West African savanna dwellers, especially those in rural areas. Contemporary studies show this very clearly. Grain and sauce – millet or sorghum with green leaf sauce – prevail, day in and day out across the region. The Slow Food connection to savanna food culture is primed for more and deeper exchange.

Interest is also emerging on a different horizon. Climate scientists are beginning to look to the West African savanna for plant resources and knowledge. The savanna food culture may offer important lessons and even genetic material for the kind of 'revolutionary' action needed to stem the tide of climate change and loss of biodiversity. Savanna peoples' long, creative and relatively unique experience with producing and adapting sustainable livelihoods in very challenging environments with locally domesticated crops and an enduring pattern of use of wild plants offers a great deal. In an article highlighting risks of such disaster, renowned agricultural historian and plant geneticist Jack Harland noted, 'For the sake of future generations, we must collect and study wild and weedy relatives of our cultivated plants as well as the domesticated races. These resources stand between us and catastrophic starvation on a scale we cannot imagine' (1972, p. 212).

More recently, noted agriculturalist and crop diversity specialist Cary Fowler put it quite clearly as well. 'Crop diversity is a common heritage. How else can one describe the fruit of thousands of years of selection and husbandry? If it is a common heritage, then it follows that we share a common responsibility for its care. To our crops, the climate change we are now beginning to experience must seem like dé jà vu. They have already experienced it to some degree. The proof lies in the gene banks, as well as in subsistence farmers' fields in developing countries. Contemporary society faces many challenges and many choices. Conserving crop diversity is the prerequisite for the future evolution and success of agriculture. Few other human problems will be solved, if this one is not. Fortunately, we have crop diversity; we know how to conserve it; the technology is simple and straightforward; and the people and institutions are in place. The choice is clearly ours' (2008, p. 501). The savanna farmers, as curators of a long-standing and locally evolved agricultural system and its plant resources, have a lot to contribute on this front. They also have much to lose if things unfold as some predict.

A major study by FAO 'Climate Change and Food Resilience in Sub-Saharan Africa' (Lim et al 2011) foregrounds the high risk faced by Africa through the 'erosion of agricultural biodiversity' and the need for more engagement with traditional farmers so that important lessons can be learned from them (and information shared with them). In that volume Worede suggests, 'The broad range of genetic diversity existing in Africa, particularly in traditional and wild gene pools, is presently subject to serious genetic erosion and irreversible losses. This threat,

which involves the interaction of several factors, is progressing at an alarming rate. The most crucial ones include displacement of indigenous farmers' varieties (landraces) by new, genetically uniform crop cultivars, changes in agricultural development strategies and systems and/or land use, destruction of habitats and ecosystems, and reduction in rainfall leading to drought.' (2011, pp. 363-364). Likewise, Adenle and Agboola (2011) say that Africa will be experience effects of climate change dramatically too. They stress the need for need seed banks and knowledge conservation.

The UN's second Sustainable Development Goal also indicates that it is necessary to 'maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species.' A recent article by a noted group of plant geneticists strongly recommends expanded research on and conservation of wild plant diversity in order to address this goal and help prepare for forthcoming challenges (Castañeda-Álvarez et al 2016). But even these specialists pay very little attention to West African plants. Work clearly needs to be done on this front. We must not neglect the crops and farming knowledge of West Africa. For example, we know that 'Pearl millet and sorghum were revolutionary crops, perfectly adapted to the wide seasonal swings of temperature and moisture.' (Carney 2009, p. 25). Such *in situ* resources embedded in functioning farming systems could well help facilitate climate change adaptations. There is a great deal of knowledge and rich sustainable plant communities in the savanna. Indeed, the emergence of agriculture there came at a time of significant climate change and related threats or challenges to livelihood. The ancient farmers developed a viable path forward. They may do so again. It is encouraging to see that Mali is one of the case studies in a recent volume on community seed and gene banks (Vernooy et al 2015). Work is afoot and, evidence and arguments suggested in this paper, underscores the significance and importance of such initiatives.

Savanna food culture for thought and action

In this paper I have highlighted the distinctive character the food revolution that occurred on the West African savanna and have drawn attention to the lessons its enduring food culture offers to the Slow Food revolution and the mounting challenges presented by the climate change revolution. Archaeological and historical evidence reveals that the agrarian way of life came slowly to the savanna. Over thousands of years generations of people made their living by hunting, foraging and herding before shifting to agriculture, a farming system that was and continues to be the bedrock of life in rural West Africa. The long middle path to this foodway promoted an intimate and enduring connection with the natural plant and animal communities in the region. Accumulated knowledge and practices provided a base for the shift to agriculture – an agriculture that was and is productively adapted to ecological and environmental conditions and that still utilizes wild resources. In broad terms, the foodway that emerged has been resilient and dependable for many generations. The inheritors of this legacy, today's curators of the savanna foodway, are in a position to share their ways with interested parties – with archaeologists keen to learn more about the emergence of agriculture, with Slow Food advocates eager to glean knowledge from traditional food communities, with climate change and crop specialists working to conserve plant resources and promote sustainability and security, with consumers of ancient crops and products, and with passionate celebrants of rural ideologies and farm ethics. I hope that my presentation of the savanna foodway helps facilitate attention and dialogue. May the West African slow foodway endure and may it provide hope and resources for food resiliency and revolution on the savanna and around the globe.

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